

#4

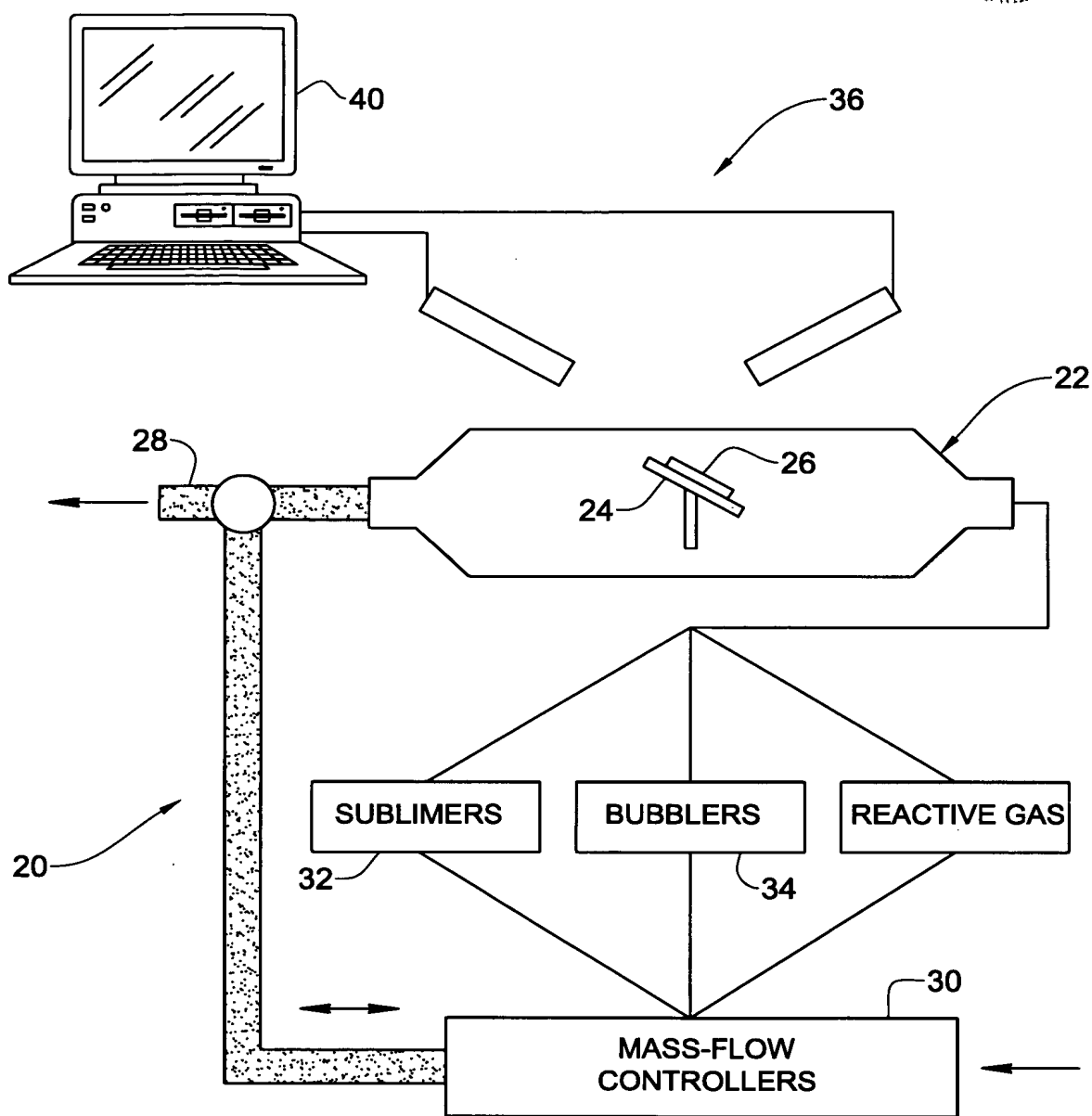


FIG. 1

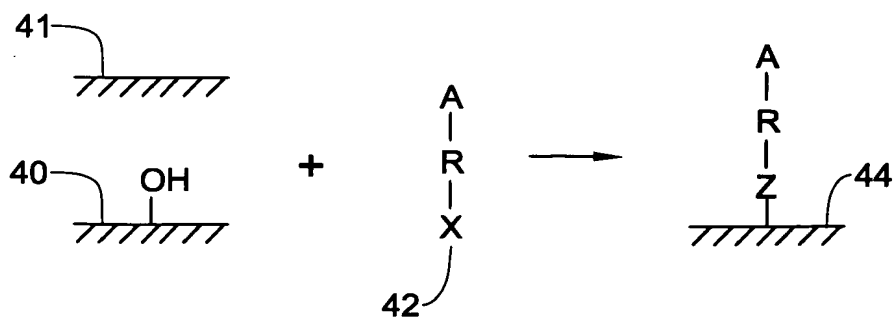


FIG. 2A

Substrate	Coupling Agent (X=silane or thiol)	Template Layer (Z=siloxane or metal sulfide)
$\begin{array}{c} \text{OH} \\ \\ \text{---} \\ \text{MO}_x \\ \text{M= Si, Ti, In, Fe, ...} \end{array}$ 40	$\begin{array}{c} \text{A} \\ \\ \text{R} \\ \\ \text{SiY}_3 \end{array}$ $\text{A= NH}_2 \text{ or } \text{---N} \begin{array}{c} \text{O} \\ // \\ \text{---} \end{array} \begin{array}{c} \text{O} \\ // \\ \text{---} \end{array} \text{---}$ $\text{R= alkyl or phenyl}$ 42	$\begin{array}{c} \text{H}_2\text{N} \\ \\ (\text{CH}_2)_{n=2-6} \\ \\ \text{Si} \\ \\ \text{O} \\ \\ \text{---} \end{array}$ $\begin{array}{c} \text{NH}_2 \\ \\ \text{---} \end{array}$ 44
$\begin{array}{c} \text{---} \\ \text{M or MM}' \\ \text{M= Au, Pt, Cu, ...} \\ \text{MM}'= \text{GaAs, CdSe, ...} \end{array}$ 41	$\begin{array}{c} \text{NH}_2 \\ \\ \text{R} \\ \\ \text{SH} \end{array}$ or $\begin{array}{c} \text{NH}_2 \quad \text{NH}_2 \\ \quad \\ \text{R} \quad \text{R} \\ \quad \\ \text{S} \quad \text{---} \quad \text{S} \end{array}$ $\text{R= alkyl or phenyl}$ 42	$\begin{array}{c} \text{NH}_2 \\ \\ (\text{CH}_2)_{n=2-6} \\ \\ \text{S} \\ \\ \text{---} \end{array}$ $\begin{array}{c} \text{NH}_2 \\ \\ \text{---} \end{array}$ 44

FIG. 2B

Substrate	Coupling Agent (X= OH, CO ₂ H, PO ₃ H ₂)	Template Layer (Z= alkoxy silane, phosphate or carboxylate)
$\begin{array}{c} \text{Cl} \\ \\ \text{---} \\ \text{Si} \\ \\ \text{O} \end{array}$ 40	HO - R - NH_2 $\text{R= alkyl or phenyl}$ 42	$\begin{array}{c} \text{H}_2\text{N} \\ \\ (\text{CH}_2)_{n=2-6} \\ \\ \text{O} \\ \\ \text{Si} \\ \\ \text{O} \end{array}$ $\begin{array}{c} \text{NH}_2 \\ \\ \text{---} \end{array}$ 44
$\begin{array}{c} \text{---} \\ \text{II-IV} \\ \text{---} \\ \text{III-V} \end{array}$ 41	HOOC - R - NH_2 $(\text{HO})_2\text{OP - R - NH}_2$ $\text{R= alkyl or phenyl}$ 42	$\begin{array}{c} \text{NH}_2 \\ \\ (\text{CH}_2)_{n=2-6} \\ \\ \text{O} \\ \\ \text{CdSe} \end{array}$ $\begin{array}{c} \text{NH}_2 \\ \\ \text{---} \end{array}$ 44

FIG. 2B CONT

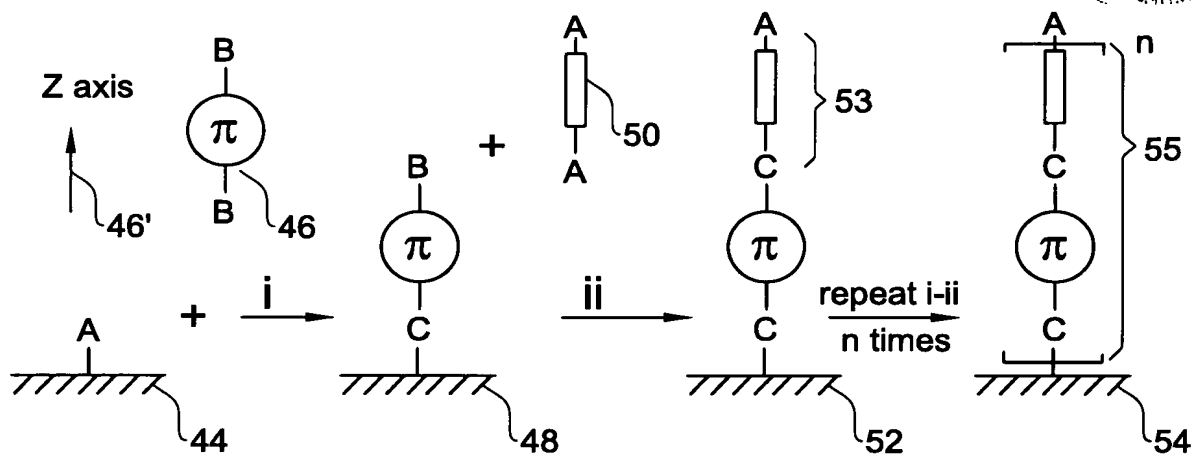


FIG. 3A

A	B	C	INS./SC	COND./SC	
$-\text{NH}_2$					INS/COND
$\text{R}-\text{CH}(\text{NH}_2)-\text{R}$			$-(\text{CH}_2)_n-$ $n=1-12$	 $n=1-6$ oligothiophene	
$-\text{NH}_2$	$\text{C}=\text{O}$	$\text{C}=\text{N}-$	 $n=0-5$	 $n=1-6$ oligoaniline	
$-\text{SiCl}_3$	$-\text{OH}$		$\text{B}-\pi-\text{B}$	$\text{A}-\pi-\text{A}$	SC/SC
	$-\text{OH}$		naphtalene perylene terylene anthracene pentacene	porphyrine phthalocyanine	

FIG. 3B

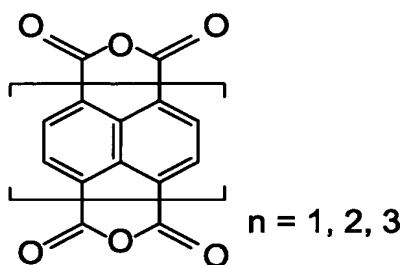
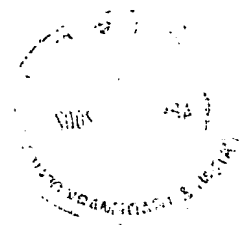


FIG. 4A

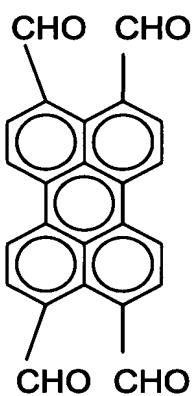


FIG. 4B

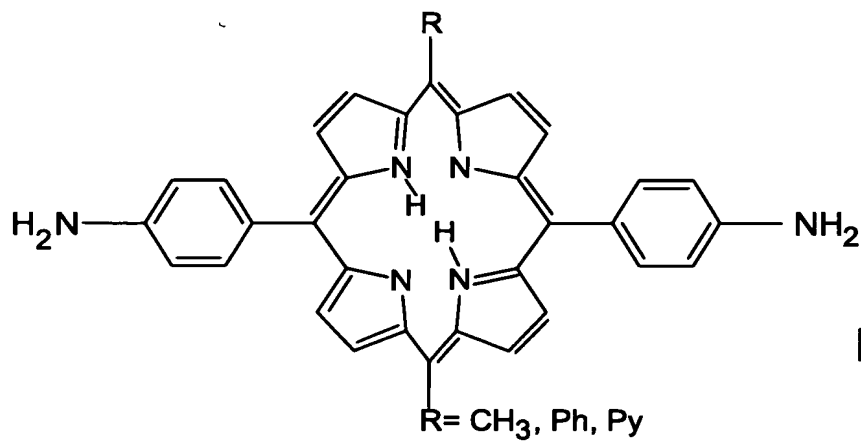


FIG. 4C

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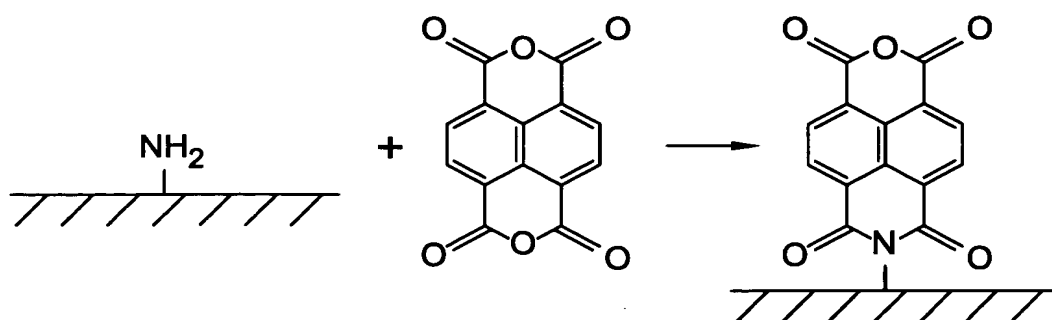


FIG. 5A

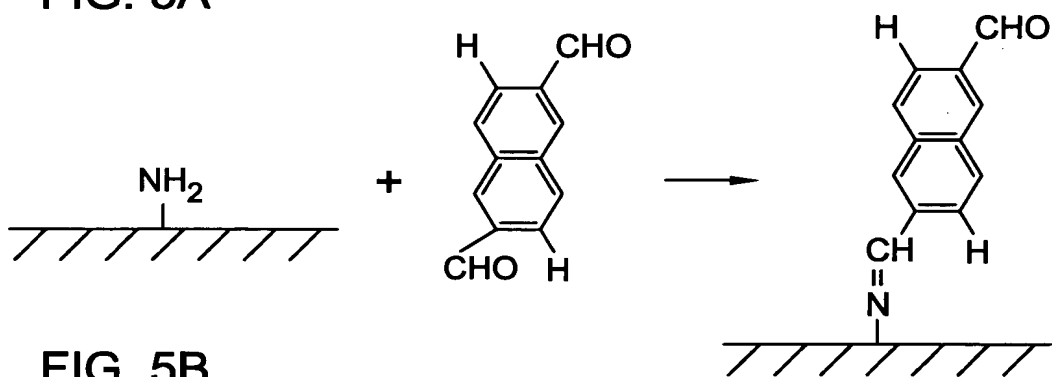


FIG. 5B

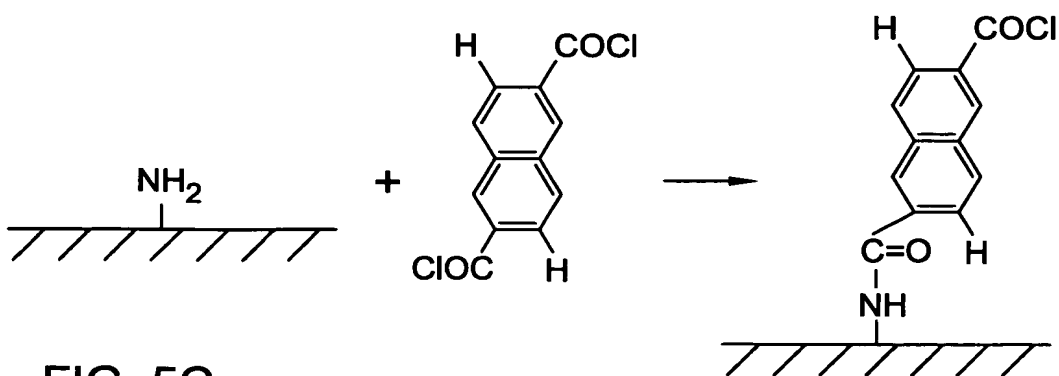


FIG. 5C

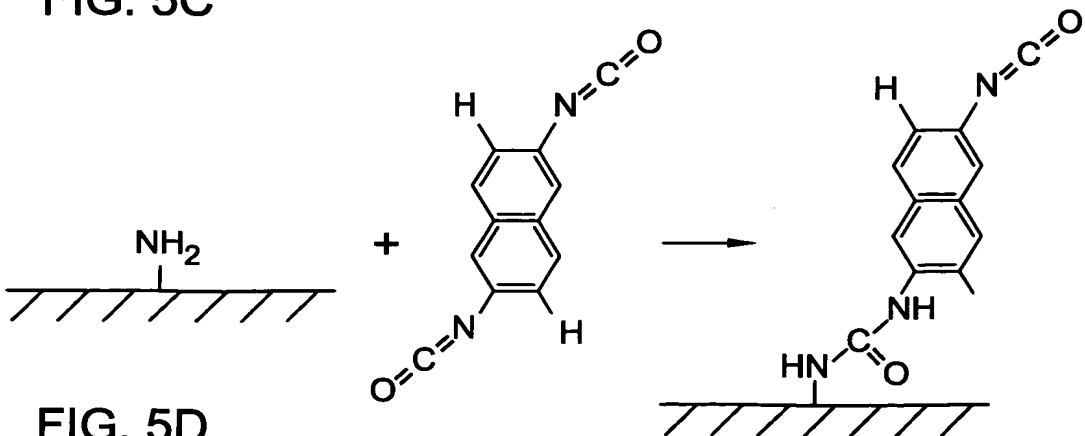


FIG. 5D

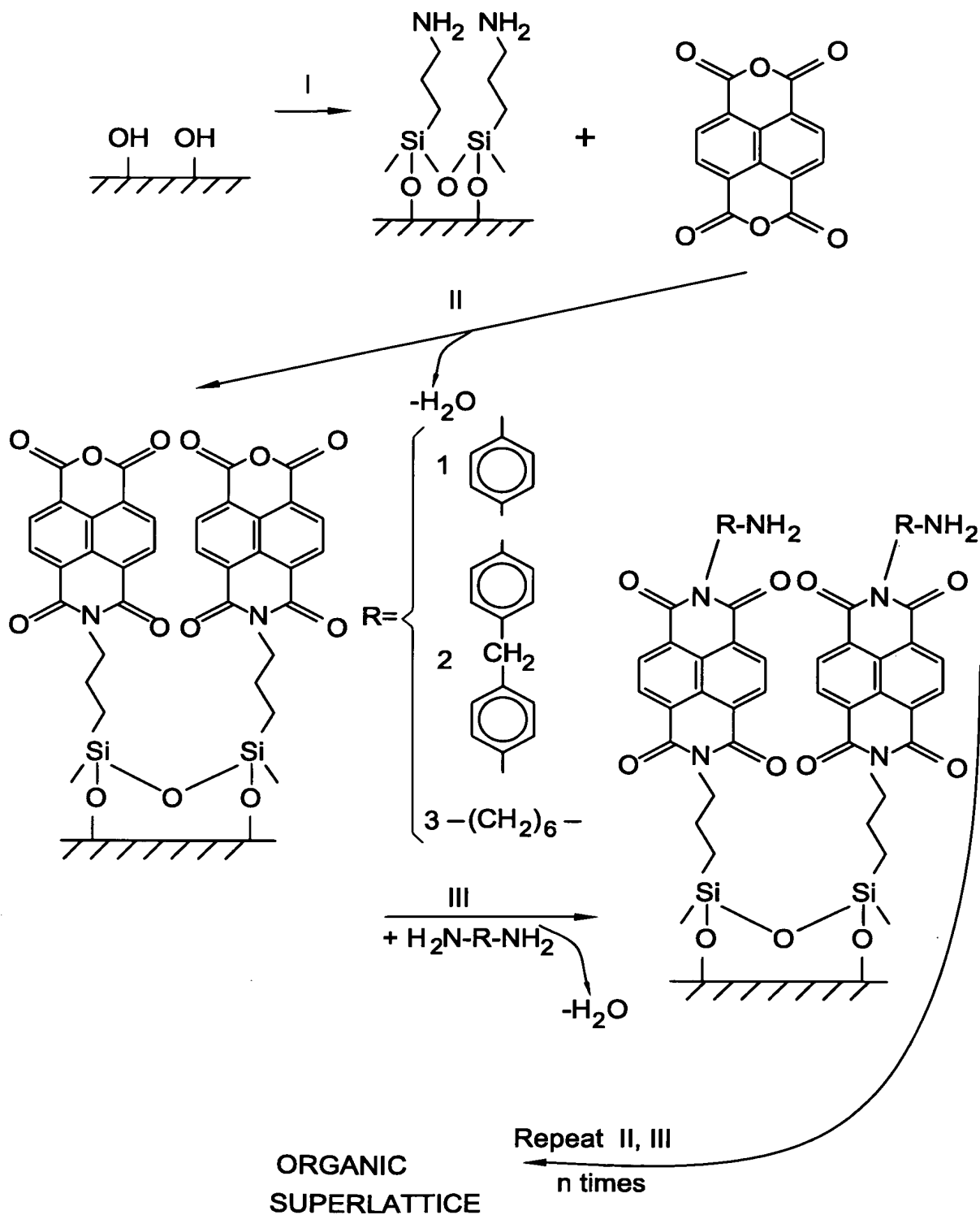


FIG. 6

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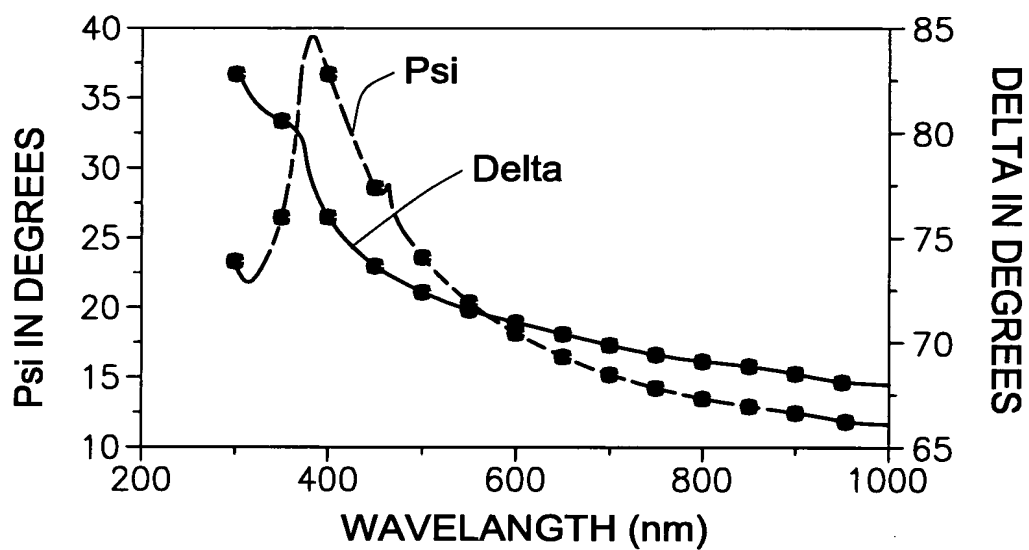


FIG. 7

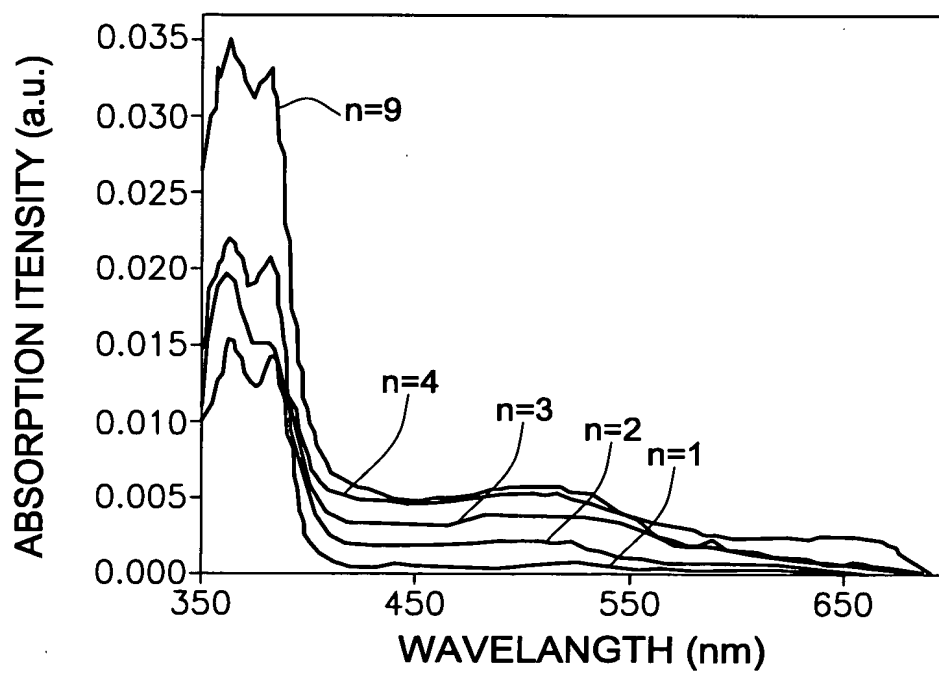


FIG. 8

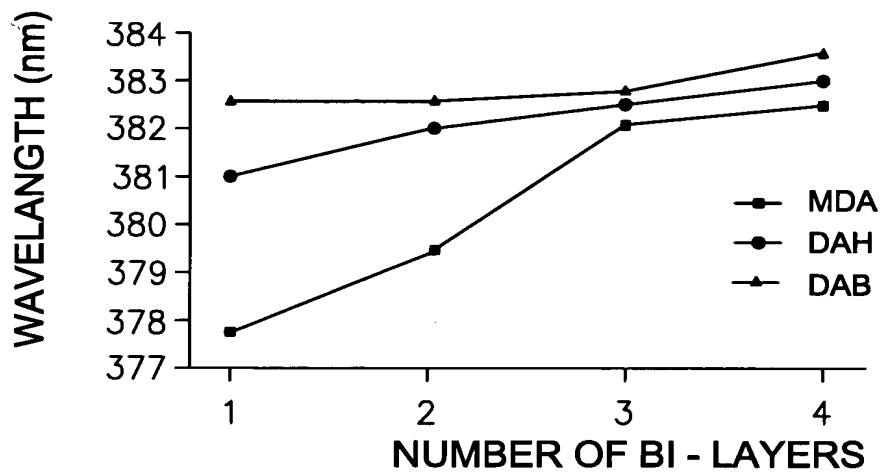
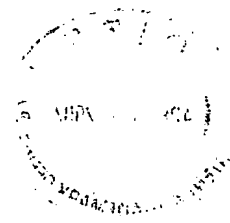


FIG. 9

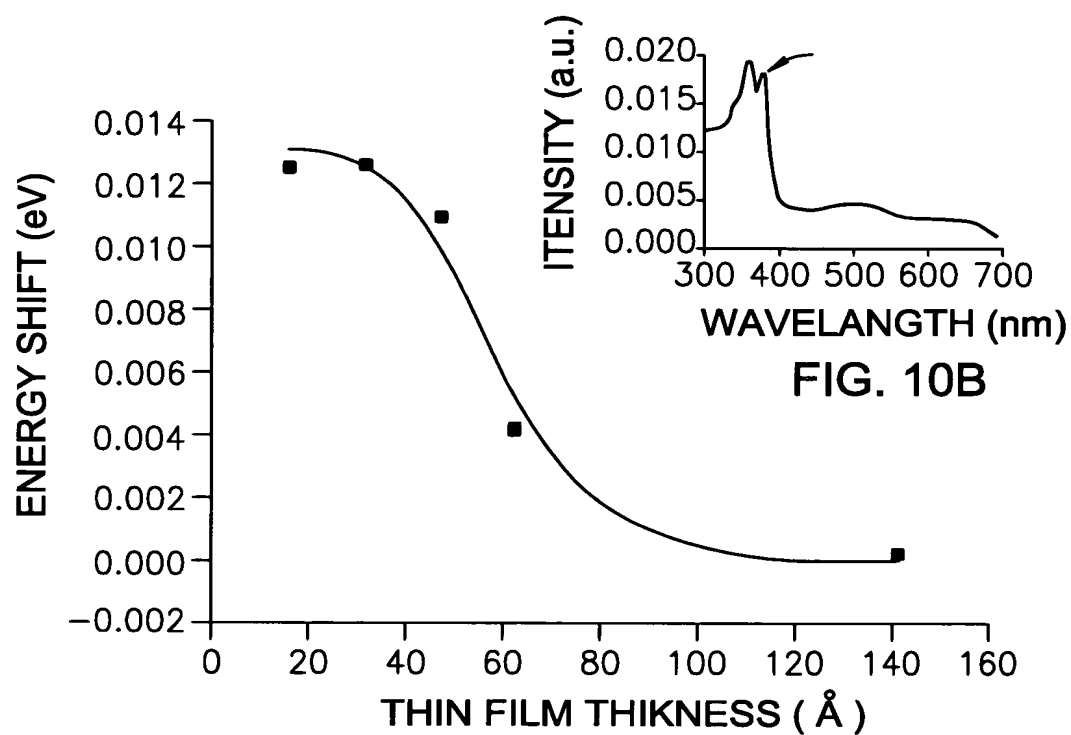


FIG. 10B

FIG. 10A

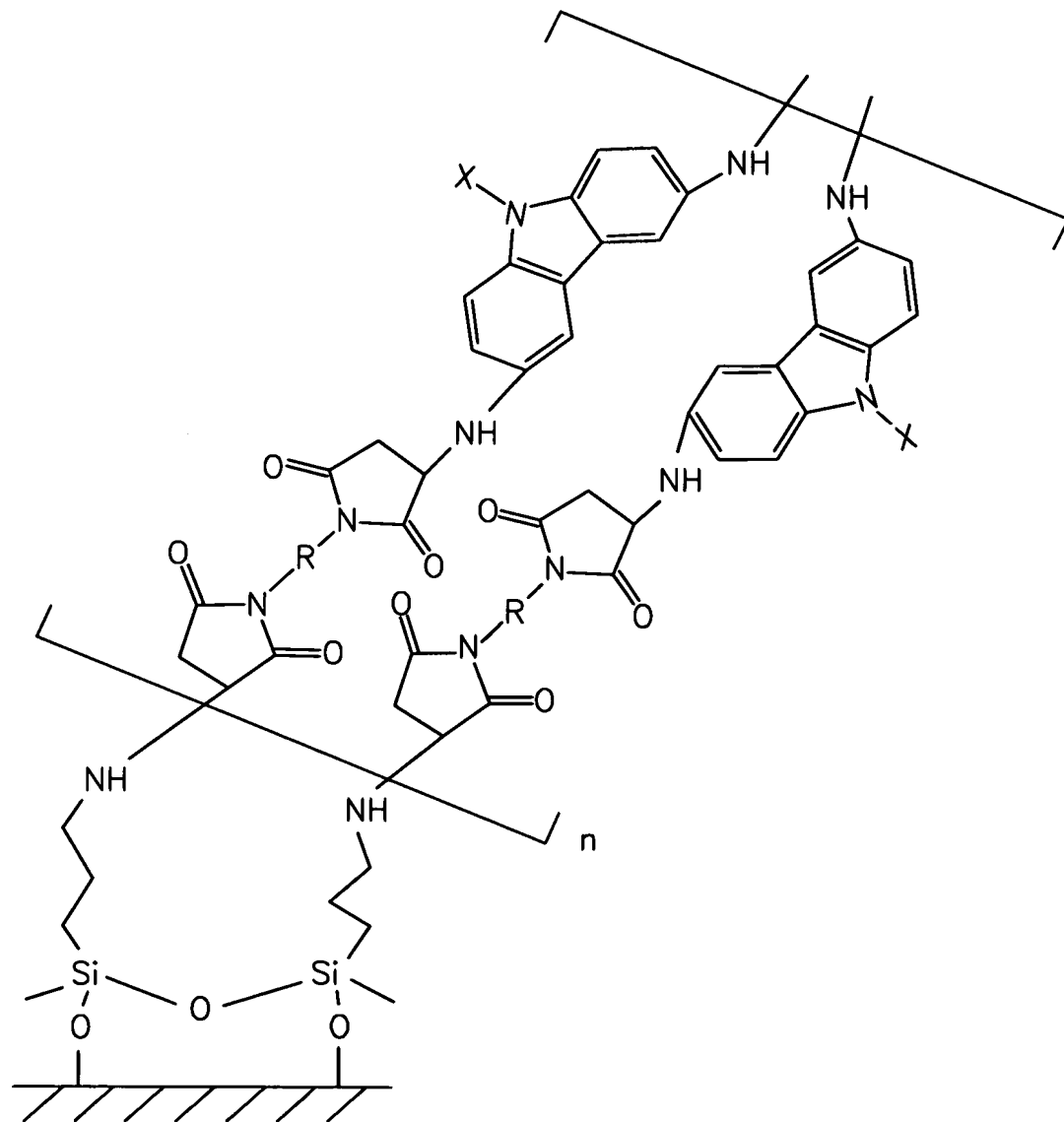


FIG. 11

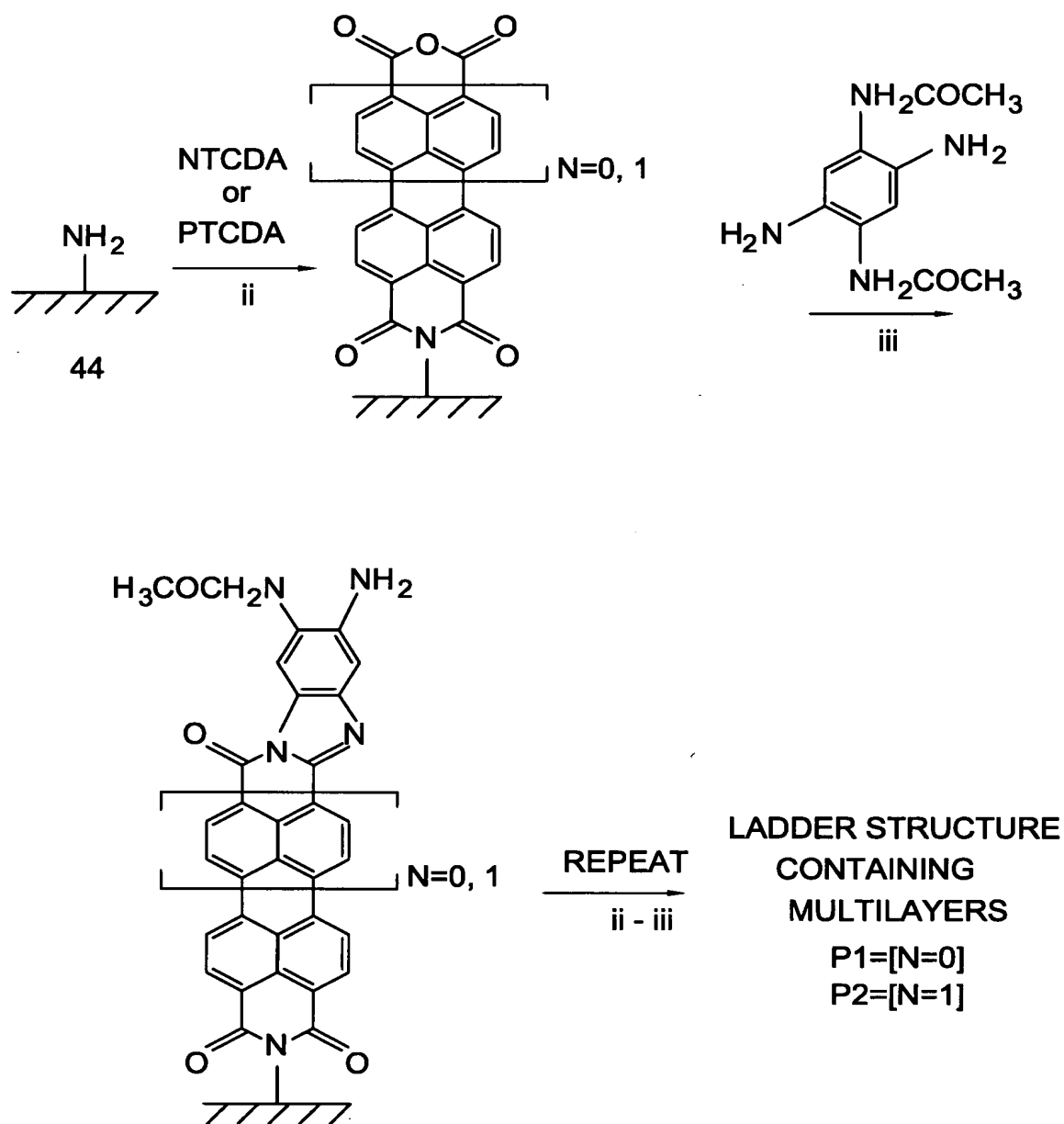


FIG. 12A

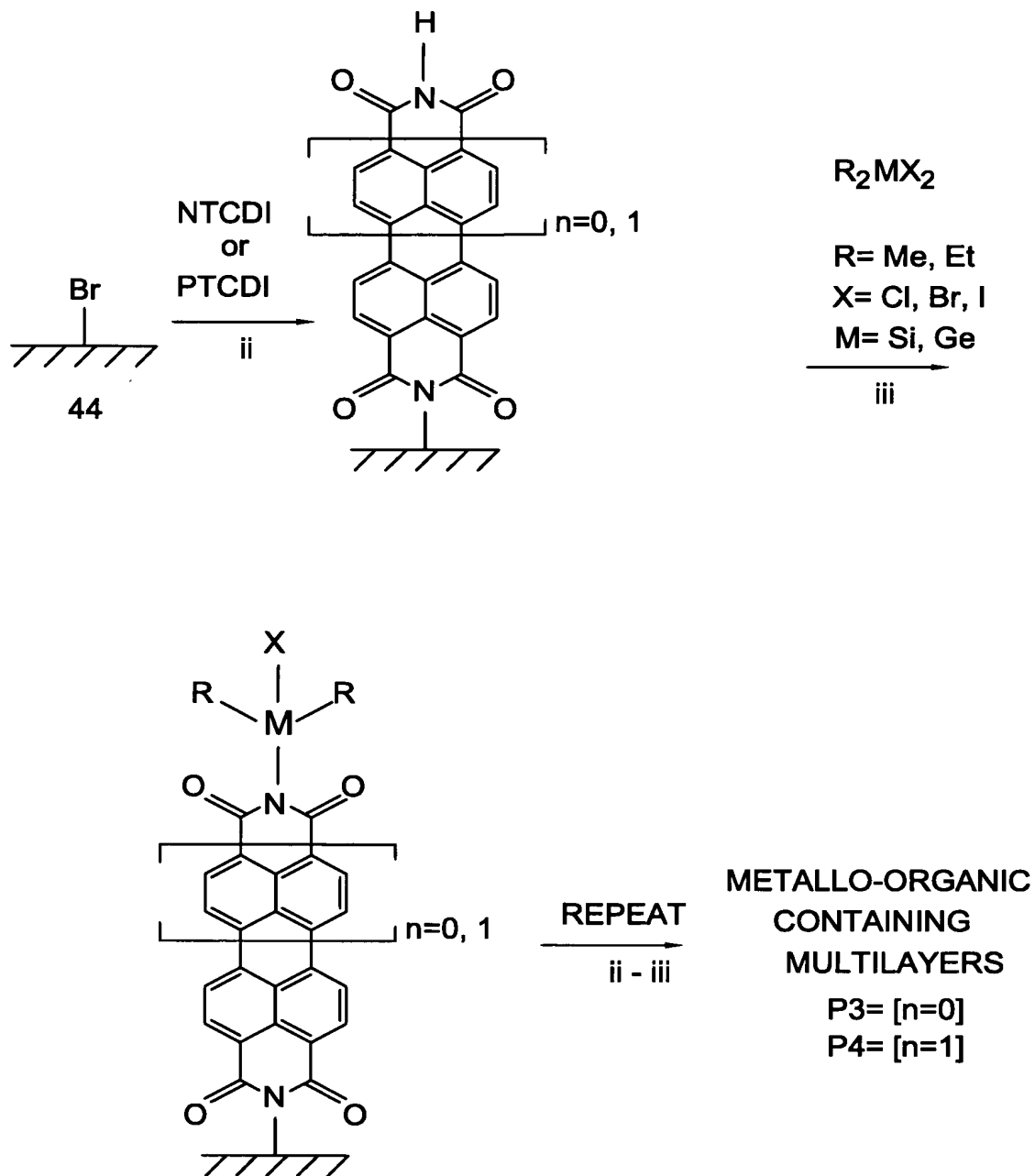


FIG. 12B

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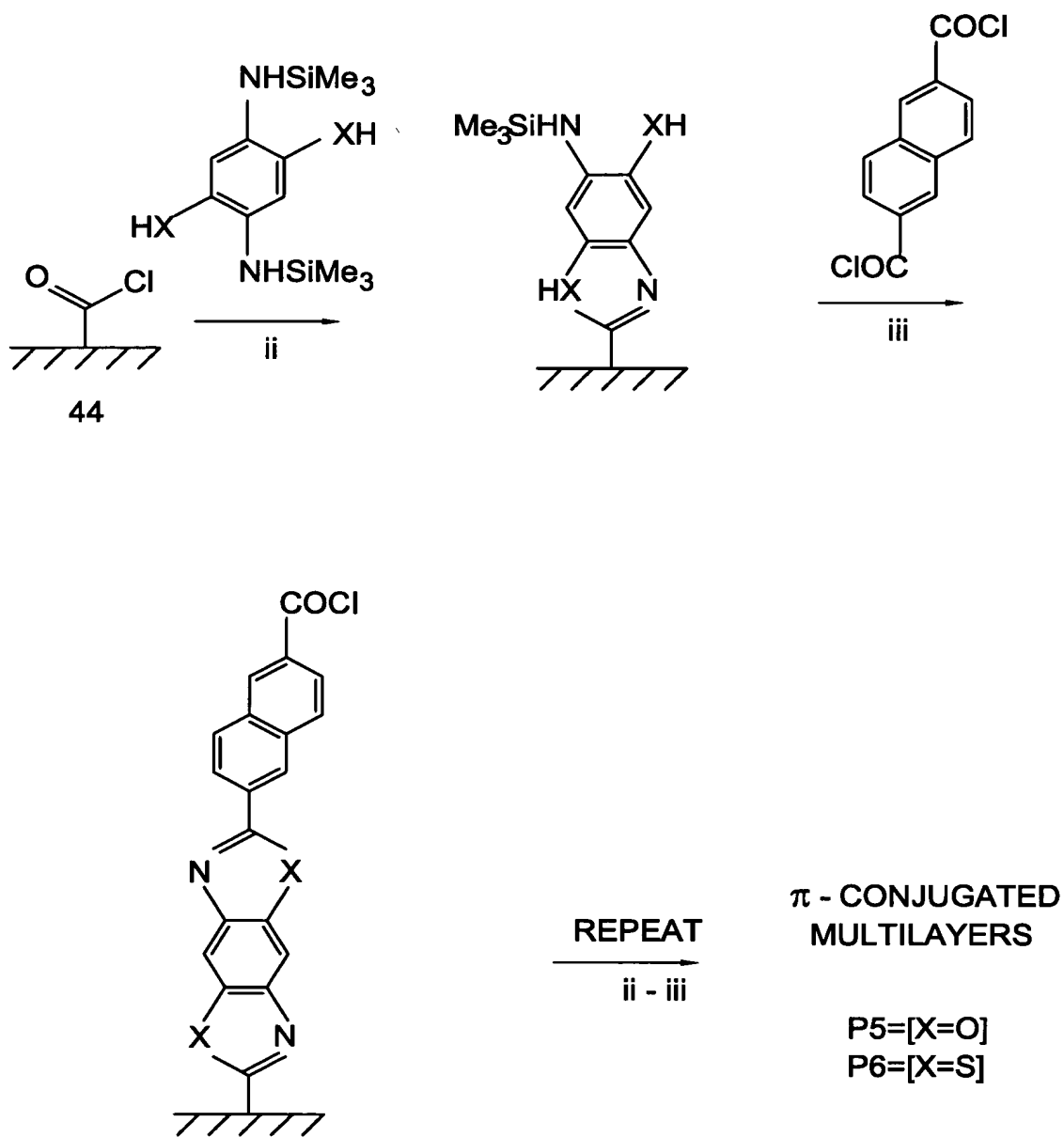
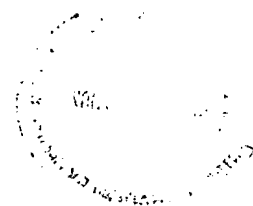


FIG. 12C

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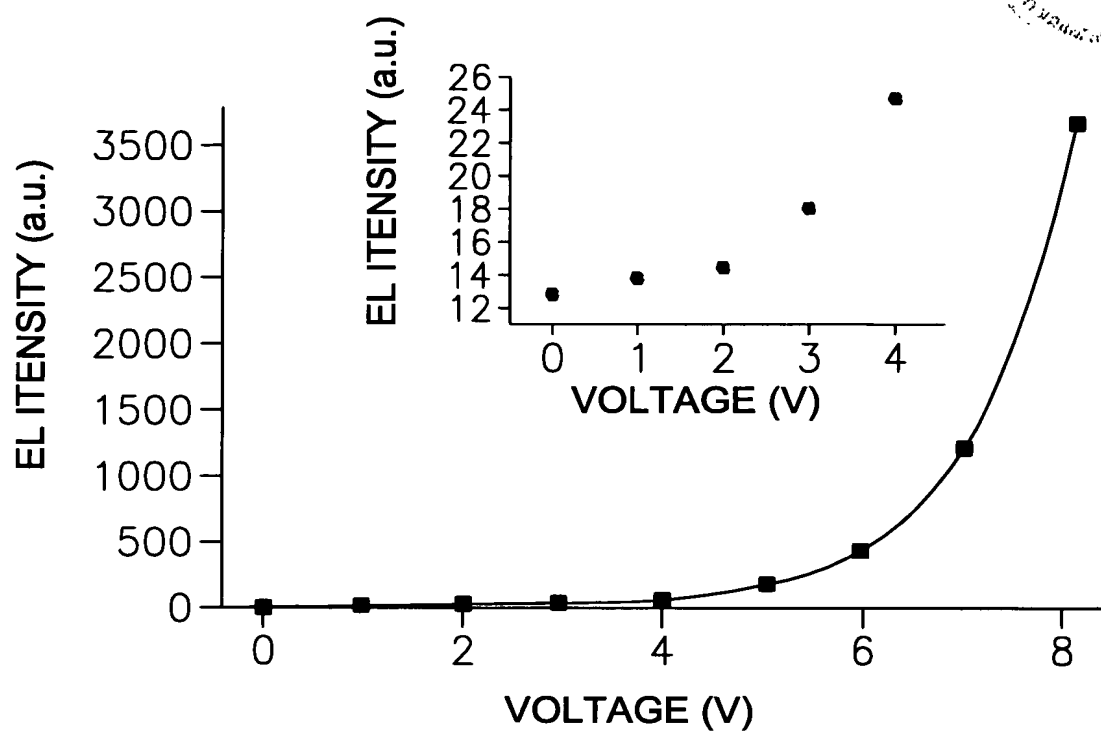


FIG. 13A

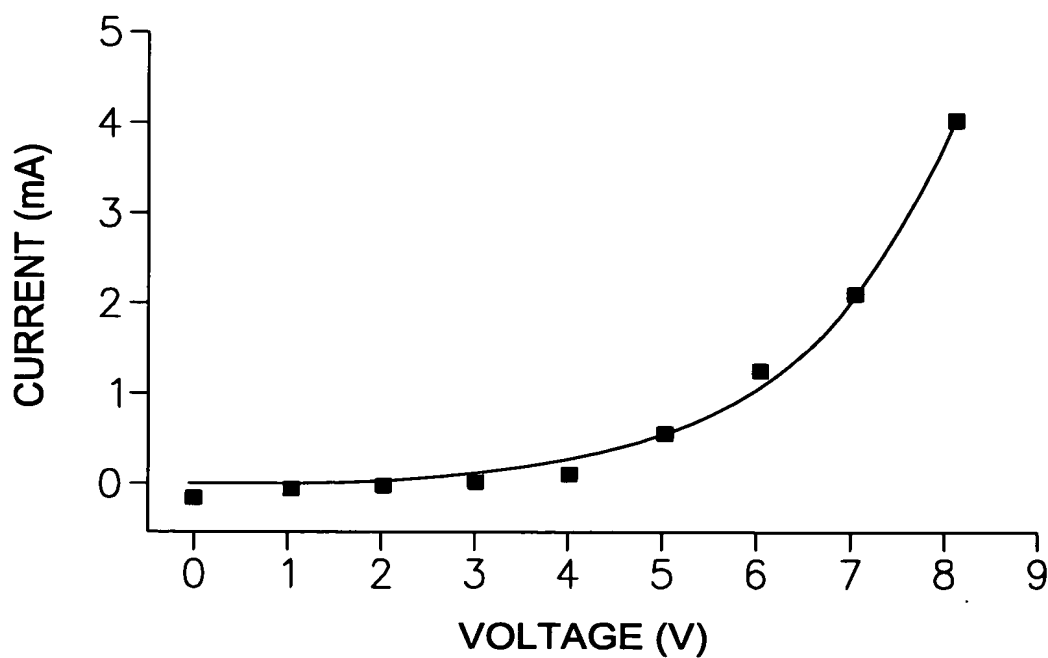


FIG. 13B

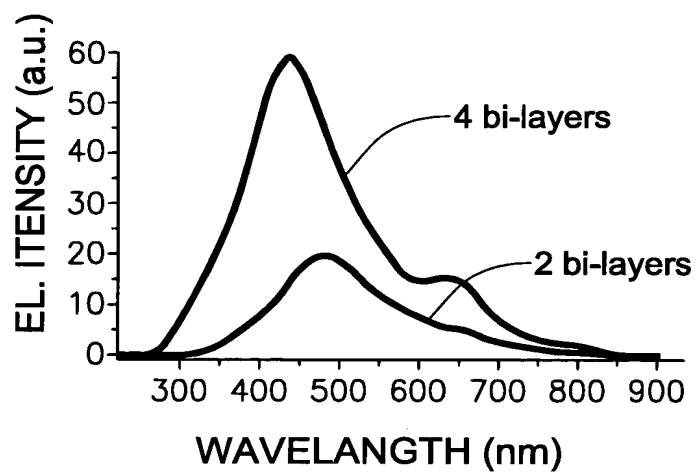


FIG. 14

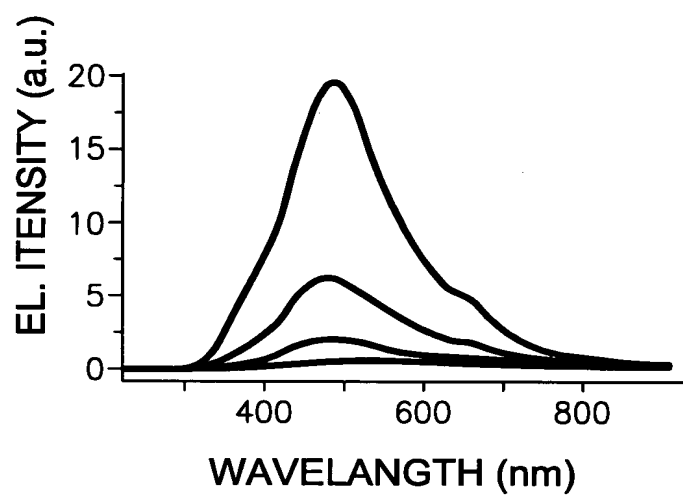


FIG. 15

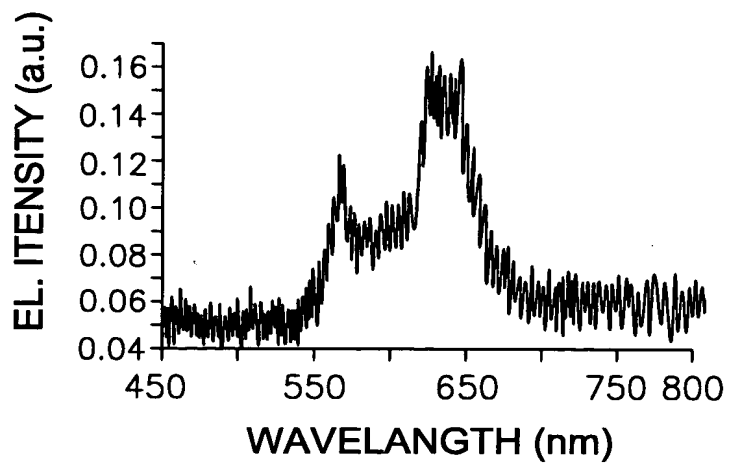


FIG. 16

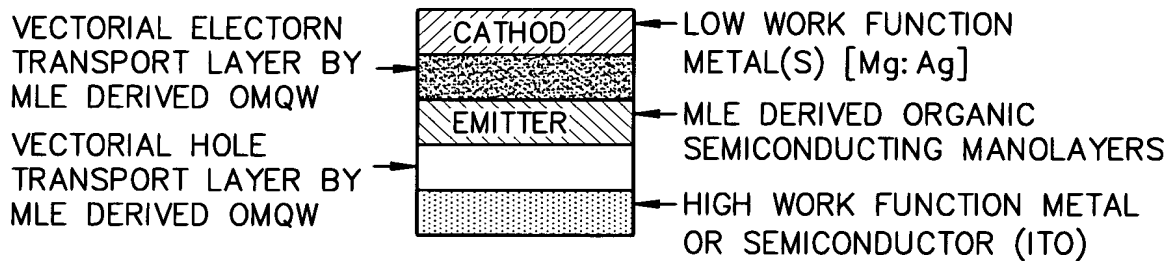


FIG. 17A

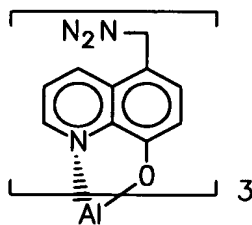


FIG. 17B

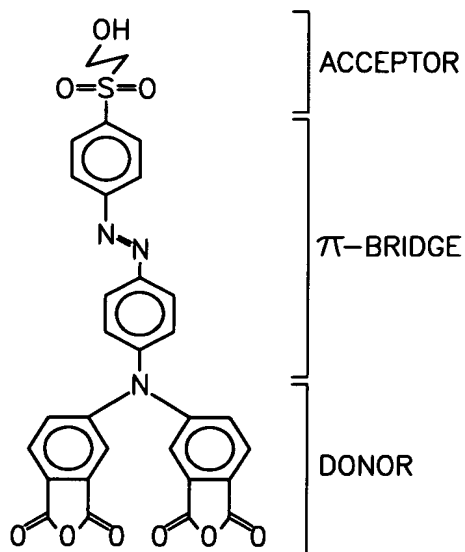


FIG. 18

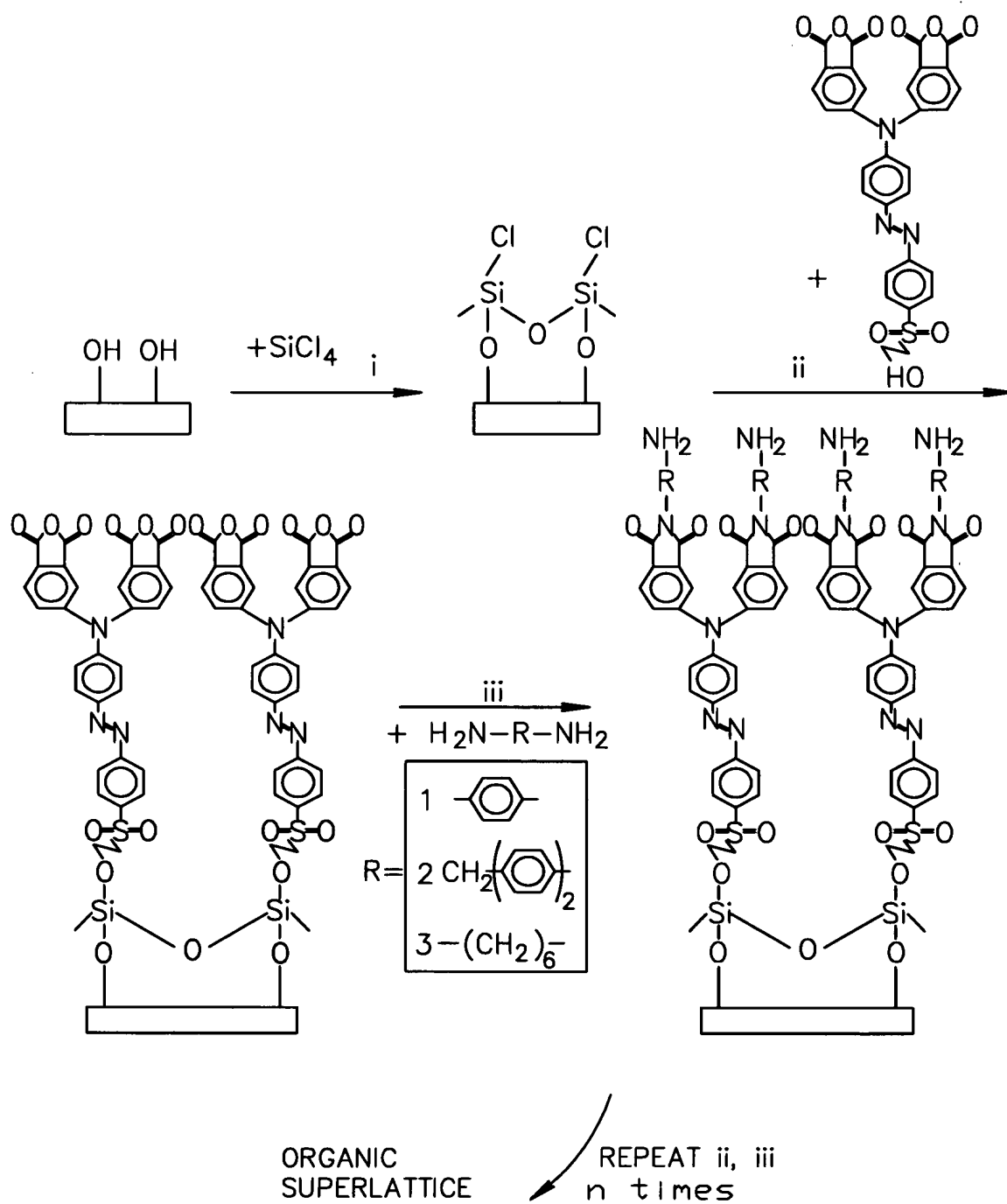


FIG. 19